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The Rediscovery of *Leptothorax silvestrii* (Santschi) (Hymenoptera, Formicidae)[1]

By William S. Creighton[2]

In 1909 Santschi described an ant, said to have been taken in Tucson, Arizona, as *Tetramorium silvestrii*. Nothing in Santschi's description indicates that *silvestrii* is actually a member of the genus *Leptothorax*, hence the writer believes that when Emery transferred *silvestrii* to *Leptothorax* in 1922, he must have done so on the basis of material sent him by Santschi. But since Emery did not explain how he was able to make this transfer, the generic reallocation was factually unsupported. No additional material of *silvestrii* was taken for more than a quarter of a century after Emery's shift, and during that period three courses were open to myrmecologists in the case of *silvestrii*. It could be treated as a *Tetramorium* on the basis of Santschi's description; it could be considered as a *Leptothorax* on the basis of Emery's transfer; or it could be regarded as a species of doubtful generic affinity. In recent years this unsatisfactory situation has been eliminated by the discovery of additional specimens of *silvestrii*. These specimens prove that Emery was correct in treating *silvestrii* as a member of the genus *Leptothorax*. Indeed, about the only feature which might suggest a relationship to *Tetramorium* is the rectangular node of the petiole. The clypeus is typically that of *Leptothorax*, and it is hard to understand how Santschi could have supposed that *silvestrii* belongs to *Tetramorium*.

As far as the writer has been able to ascertain, the first myrmecologist to discover additional specimens of *silvestrii* was L. F. Byars. About 1949 Byars took a single nest of this insect at Ruby, Arizona, a mining camp a few miles north of the border in Santa Cruz County. Specimens from this nest were sent to M. R. Smith for identification. Smith correctly considered that these specimens were the lost *silvestrii*, but to

[1] This paper is based on field work done on a Guggenheim Fellowship during 1951–1952. The writer wishes to express his thanks for this opportunity.

[2] Department of Biology, the City College of New York.

make the matter certain, he sent specimens to Kutter in Switzerland for comparison with Santschi's type. Smith has very generously turned over to me the data Kutter transmitted to him. Kutter drew up a detailed list of minor differences that separate Santschi's type from Byars' specimens. These dealt with color, gastric sculpture, the thickness of the femora and the shape of the head, funicular joints, epinotal spines, and petiole. According to Kutter the two cannot be confused. But it should be remembered that Kutter had only three workers from Smith and the type series of *silvestrii,* which was never extensive, is now apparently limited to the single type. On the basis of the above comparison Kutter could not realize that most of the variations he listed are normally present in a nest series of *silvestrii.* This statement is based on a study of six nests which the writer took at three stations in southern Arizona during 1951 and 1952. The total worker population of these six nests was in excess of 300 specimens. While this number is not unusually large, it is large enough to permit an evaluation of variation within the species. Since the same sort of variation occurred in each of the six colonies, there is no reason to attribute separatory significance to these slight differences.

Leptothorax silvestrii is an arboreal species and, to judge from the limited data available, prefers to nest in evergreen oaks, particularly *Q. emoryi.* Like most arboreal ants that live in Arizona, it nests in good-sized limbs rather than twigs. The colonies are comparatively small. They usually consist of from 50 to 70 workers and a single female. The writer believes that additional collecting in the evergreen oak areas in the mountains of southern Arizona will show that *silvestrii* occurs in all of the main ranges. In this connection it seems well to note that the type locality is probably not Tucson, but one of the near-by canyons in the Santa Catalina Mountains. No colony of *silvestrii* taken to date (including Byars' nest from Ruby) has come from an elevation lower than 3500 feet. Nor does the insect occur on the open desert. It is unlikely therefore that it would have been taken in Tucson, which is at only 2500 feet and is well removed from any areas of evergreen oaks.

Leptothorax (Leptothorax)[1] *silvestrii* Santschi

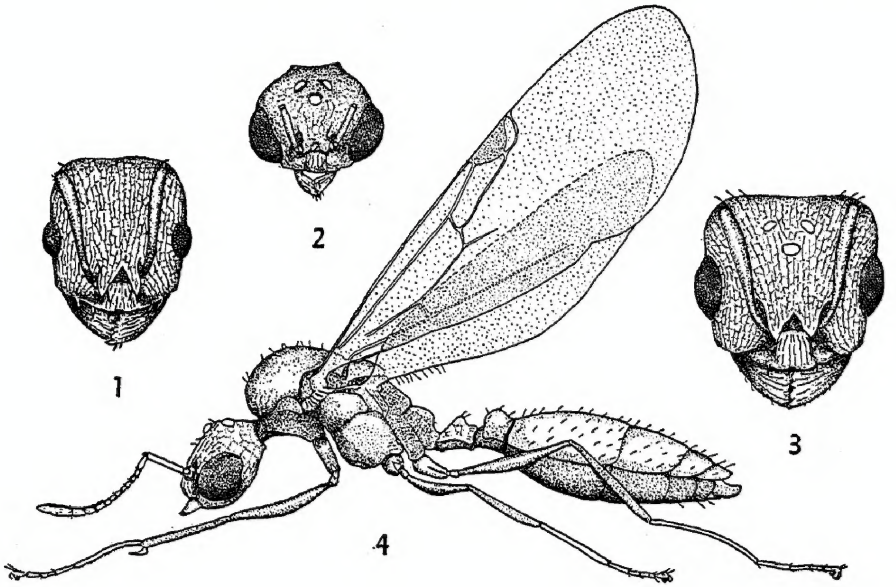
WORKER (FIGS. 1, 5) : Length of head (mandibles excluded), 0.92–0.75 mm.; thorax, 1.4–1.1 mm.; over-all length, 4.0–3.25 mm.

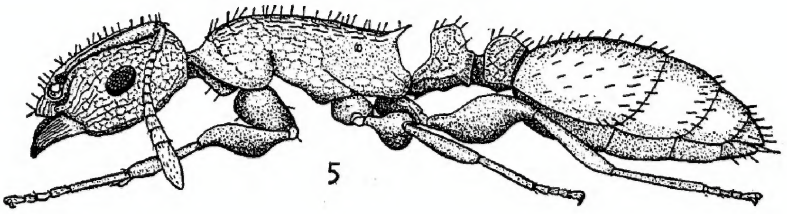
[1] M. R. Smith has recently shown that, because of a neglected type designation, the subgeneric name *Leptothorax* must be applied to the subgenus previously called *Mychothorax.* Smith proposes to replace *Leptothorax* with *Myrafant.* Gregg and the writer have appealed this case to the International Commission on Zoological Nomenclature. While it is pending, to continue to use the older subgeneric names seems preferable.

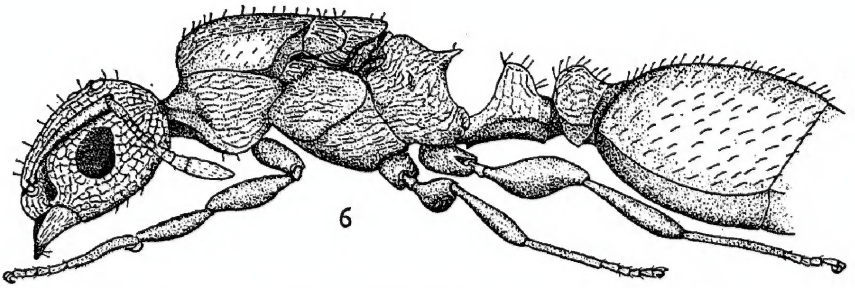
Head subrectangular, its length from the middle of the occipital border to the anterior edge of the clypeus equal to the greatest width through the eyes in the large workers and exceeding this width in the small ones. Eyes strongly convex. Occipital angles broadly and evenly rounded. Median lobe of the clypeus cuboidal and prominent, passing to the lateral portions through a steep declivity. A distinct median notch is present in the anterior border of the clypeus. Frontal lobes projecting forward beyond the rear edge of the clypeus. Frontal area triangular. Antennae with 12 segments, the last three segments forming a distinct club. Scape stout, its tip failing to reach the occipital border by an amount less than the greatest thickness of the scape. Mandibular teeth poorly developed, only the terminal tooth prominent.

Thorax, seen from above, without a trace of meso-epinotal suture, the sides of the pronotum feebly convex, the pronotum distinctly wider than the rest of the thorax. Epinotal spines stout and moderately divergent. In most specimens the length of the spines is a little more than one-half of the distance separating their tips but in some specimens the spines are shorter than half of this distance. Seen in profile the dorsum of the thorax is feebly convex. The epinotal spines are always broad at the base. In some specimens they are straight, in others they curve slightly downward. Petiole, seen in profile, with a node which is almost rectangular in large specimens but which often has a somewhat rounded summit in small ones. Anterior peduncle with a small but distinct antero-ventral tooth. Posterior peduncle thick and very short. Postpetiole, in profile, with an abruptly descending anterior face and a rounded crest which slopes to the rear. Ventrally the postpetiole forms a blunt, V-shaped projection. Seen from above the petiole has the shape of a blunt wedge. It is, at most, two-thirds as wide as transverse, rectangular postpetiole. Anterior edge of the gaster truncate. All the femora swollen, the fore femora least so, the hind femora very notably enlarged.

Clypeus and mandibles feebly shining, the former with longitudinal rugae, the latter evenly striate. The remainder of the head, the thorax, and the petiolar nodes with reticulo-rugose sculpture, the surface between the rugae densely granulose and dull. The rugae at the middle of the head are distinctly longitudinal, those elsewhere are less regular. The rugae on the sides of the thorax are sometimes replaced, especially towards the rear of the thorax, by areas of dense granulation. Rugae of the petiole and postpetiole a little more delicate than those of the head and thorax. Dorsum of the first gastric segment with varying amounts of fine, coriaceous sculpture which dulls the surface where it occurs. In some specimens this sculpture is confined to a small area near the base of the node. In others it covers almost all of the dorsum of the first







FIGS. 1–6. *Leptothorax silvestrii*. 1. Head of worker. 2. Head of male. 3. Head of female. 4. Profile of male. 5. Profile of worker. 6. Profile of female. All figures to the same scale. Drawn by the author.

segment. The remainder of the gaster is smooth and shining, with scattered piligerous punctures. Scapes, femora, and tibiae very finely and densely reticulo-rugose, the surface dull. Erect hairs stout, blunt, and yellow or orange in color. Present on the entire upper surface of the body. Appendages with numerous fine, short, fully appressed, yellow hairs. Color clear yellow to deep, reddish yellow.

FEMALE (FIGS. 3, 6) : Length of head (mandibles excluded), 1.0 mm.; thorax, 1.8 mm.; over-all length, 5.5–6.0 mm.

Head distinctly wider behind than in front of the eyes. Occipital border broadly and feebly concave in the middle. Ocelli large and prominent. Eyes strongly convex. The antennal scape in repose barely fails to reach the occipital margin. Frontal lobes a little broader than those of the worker. Clypeus, frontal area, funiculi, and mandibles like those of the worker.

Thorax, seen in profile, flattened above, the scutum and the scutellum forming a single, flat plane, except for the rounded anterior declivity of the scutum. Basal and declivious faces of the epinotum approximately equal in length. Epinotal spines thick, heavy, and with broad bases. Seen from above the thorax is distinctly wider than the head. The scutum, which is evenly rounded in front, increases in width to the level of the insertion of the anterior pair of wings. Posterior to this level the thorax narrows evenly to the declivious face of the epinotum. Epinotal spines, seen from above, with the bases so thick that the spines have the shape of slender pyramids. Node of the petiole, in profile, with a steeply sloping anterior face which meets the crest at a sharp angle. Behind this angle the crest forms an even, descending curve with the posterior face. Postpetiole like that of the worker. Seen from above the petiole has a pyriform outline. The postpetiole is transversely rectangular and approximately one and one-half times as wide as the greatest width of the petiole. Gaster truncate anteriorly. Femora much less swollen than in the worker.

Cephalic sculpture like that of the worker but with the granulation between the rugae more feeble and the surface a little more shining. Sides of the pronotum with fine, longitudinal rugae which form comparatively few reticulations. Granulation on the pronotum feeble, as in the head. Entire scutum covered with coarse, widely spaced, piligerous punctures. In addition the scutum has two broad bands of very delicate rugae which grade into granulation towards the midline. Lateral portions of the scutum smooth and shining. Scutellum with a few weak rugae and scattered punctures, its surface more shining than the scutum. Mesothoracic sternite and episternite and the entire epinotum with reticulo-

rugose sculpture and dense granulation, the surface feebly shining or dull. Sculpture of the petiolar nodes as in the worker. Dorsum of the gaster smooth and shining except for small piligerous punctures. Erect hairs and appressed pilosity essentially the same as in the worker except that there are more erect hairs on the petiolar nodes and the funiculi in the female. Color clear, orange-yellow.

MALE (FIGS. 2, 4): Length of head (mandibles excluded), 0.55 mm.; thorax, 1.25 mm.; over-all length, 3.0–3.5 mm.

Head trapezoidal, the greatest width through the eyes about one and one-third times as great as the length from the occipital margin to the anterior edge of the clypeus. Mandibles small, with only the apical and subapical teeth well developed. Clypeus moderately projecting. Frontal lobes small and short. Frontal area indistinct. Antennae with 13 segments. Scapes slender and straight, the tip in repose reaching the level of the front edge of the median ocellus. Funicular club less distinct than in the worker and female. Eyes large; the anterior border of the eye lies close behind the insertion of the mandible. Ocelli large and prominent. Occipital border with a low but distinct flange.

Thorax, in profile, with the rounded anterior end of the scutum overhanging the adjacent portion of the pronotum. Scutellum feebly convex. Epinotum without spines or teeth and depressed well below the level of the metanotum. The basal face of the epinotum is much longer than the declivous face and has a narrow, transverse impression at the middle. Seen from above the anterior edge of the scutum is strongly and evenly convex. Parapsidal furrows present. Mayrian furrows absent. Metathoracic paraptera prominent and subtriangular. Scutellum transversely oval. Node of the petiole, in profile, bluntly triangular and passing without a break to the short, thick, anterior peduncle. Posterior peduncle of the petiole very thick. Postpetiole, in profile, broadly rounded above. Seen from above the postpetiole is transversely oval and about one and one-half times as wide as the petiole. Anterior edge of the gaster narrowly truncate. Genital valves comparatively small. Legs long and slender. Femora elongate and very little swollen. Wings hyaline, iridescent, and evenly covered with extremely tiny hairs. Veins and stigma pale yellow.

Mandibles feebly striate. Clypeus with low longitudinal rugae. Upper surface of the head densely granulose and dull, with a delicate, reticulo-rugose sculpture overlying the granulation. The remainder of the body distinctly more shining than the head. Pronotum and the anterior edge of the scutum with weak reticulo-rugose sculpture and some granulation. Most of the scutum, the scutellum, and the mesothoracic sternite and episternite smooth and shining. The entire epinotum with delicate,

reticulo-rugose or coriaceous sculpture, the surface less shining than the rest of the thorax. Node of the petiole with feeble rugae and granulation. Dorsum of the postpetiole and the gaster smooth and shining, with small scattered piligerous punctures. Erect hairs shorter and finer than those of the worker and female. Hairs sparse on the petiolar nodes, more abundant on the thorax and the gaster. Color dull yellow, the head and the first gastric segment tinged with brown.

Gynetype and androtype deposited in the collection of the American Museum of Natural History.

The specimens from which the above descriptions were drawn were secured in the following localities:

Molino Canyon (4100 feet), Santa Catalina Mountains, Arizona, one colony in *Q. emoryi.*

Brown Canyon (4000–4200 feet), Baboquivari Mountains, Arizona, three colonies in *Q. emoryi.*

Forestry Cabin, Baboquivari Canyon (3500 feet), Baboquivari Mountains, Arizona, two colonies in *Q. emoryi.*

Leptothorax silvestrii is closely related to *L. bradleyi* Wheeler and *L. wheeleri* M. R. Smith. It differs from both these species in the sculptured dorsum of the first gastric segment but, since this feature varies considerably, it is preferable to have more constant differentiating criteria. The postpetiole in *silvestrii* is strongly transverse and rectangular when seen from above. The petiole is never more than two-thirds as wide as the postpetiole and in smaller specimens the petiole may not be more than one-half as wide as the postpetiole. In both *bradleyi* and *wheeleri* the postpetiole is notably less transverse. The petiole is at least three-quarters as wide as the postpetiole. The median notch in the anterior edge of the clypeus is much more distinct in *silvestrii* than it is in *bradleyi* and *wheeleri.*